

2

LL = OFFICE LL = 50 PSF (MB-4-1)  
 Partition = 15 PSF

LL = 65 PSF

Roof:

DL = 6' SLAB = 75 PSF  
 CEILING = 12 PSF  
 MECH = 5 PSF  
 MISC = 3 PSF  
 RAINING = 10 PSF

DL = 105 PSF

LL = 80 PSF

Heavy storage

12' SLAB = 150 PSF

12 PSF  
 5 PSF  
 3 PSF  
 DL = 170 PSF

LL = 250 PSF  
 (No partition)  
 ASCE 4.3.2  
 Non-Reductible Area  
 ASCE 4.7.3

Mode (3)

$A_{nv} = 6.25 \text{ in}^2$  (same as Mode (3))

Ant (4 - 3/8 - 1/8) (1/2) = 1.75 in

$A_{gv} = 7 \text{ in}^2$  (same as Mode (3))

$\phi R_n = 0.75 \times 204 = 153 \text{ k}$  governs

For shear OK

BST.  $219 \text{ k}$  governs original (fracture)

SINCE  $219 \text{ k} > 153 \text{ k}$ , RATE OK!  
 (original strength)

Lecture 4  
 TRIBONIA with

Floor

DL = 6' x 150 PSF = 75 PSF  
 CEILING = 12 PSF  
 MECH = 5 PSF  
 MISC = 3 PSF

DL = 95 PSF

1

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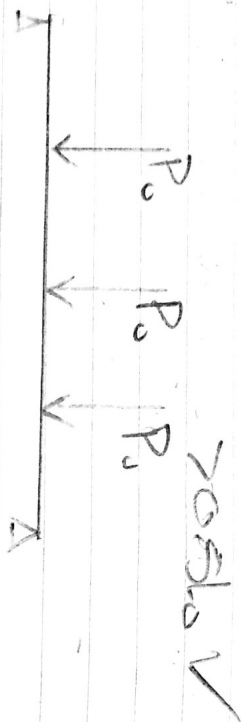
Floor Girder:

$$TBIS\ A_{TCA} = 40' \times 20' = 800\text{ FT}^2 > 400\text{ FT}^2$$

$$K_{LL} = 2.0$$

$$L_r = L_0 \left( 0.25 + \frac{15}{\sqrt{K_{LL} \Delta_T}} \right) \quad \text{ASCE 4.7.1}$$

$$L_r = 65 \left( 0.25 + \frac{15}{\sqrt{2.0 \times 800}} \right) = 41\text{ FT}$$



$$P_L = 41 \times 27 \times (10' \times 20') \times 2 = 82\text{ k}$$

$$P_D = 95\text{ PSF} (10' \times 20') \times 2 = 19\text{ k}$$

$$P_o = 14\text{ D} = 14 \times 19\text{ k} = 27\text{ k}$$

$$1.2\text{ D} + 1.6\text{ L} = 1.2 \times 19 + 1.6 \times 22 = 36\text{ k}$$

$$M_o = P_L/4 + P_o e$$

$$= \frac{36\text{ k} \times 40'}{4} + 36\text{ k} \times 10' = 720\text{ k}\text{ FT}$$

$$V_o = 3 \times 36\text{ k} / 2 = 54\text{ k}$$

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Floor Bx1:

$$TBIS\ \text{width} = 10\text{ FT}$$

$$A_T = 10' \times 20' = 200\text{ FT}^2 < 400\text{ FT}^2$$

(No reduce)

$$w_D = 95\text{ PSF} \times 10' = 0.95\text{ k/FT}$$

$$w_L = 65\text{ PSF} \times 10' = 0.65\text{ k/FT}$$

$$w_o = 1.2 \times 0.95 + 1.6 \times 0.65 = 2.18\text{ k/FT}$$

$$1.2\text{ D} + 1.6\text{ L}$$

$$\text{Fact Bx1} = 1.4\text{ D} = 1.4 \times 0.95 = 1.33\text{ k/FT}$$

vs.

$$TBIS\ Bx1\ \Delta_T = 200\text{ FT}^2 \quad R = 1.0$$

$$w_D = 10' \times 105\text{ PSF} = 1.05\text{ k/FT}$$

$$w_L = 10' \times 20\text{ PSF} = 0.2\text{ k/FT}$$

(No reduce)

$$w_o \Rightarrow 1.4 \times 1.05\text{ k/FT} = 1.47\text{ k/FT}$$

$$1.2 \times 1.05 + 1.6 \times 0.2 = 1.58\text{ k/FT}$$



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Roof GIRDERS:

7-11-19

$L = L_0 \Delta_1 \Delta_2$  (ACE 4.8-1)

210

$\frac{N}{0} (20 \text{ MHz})$

2000 x 1000

$\frac{D}{D} = \frac{D}{D}$

$$D_L = D_{\text{eff}} \times \frac{\partial}{\partial x} = \frac{\partial f}{\partial t}$$

$$P_0 = 1.4D = 1.4 \times 21 = \frac{294}{k}$$

$$D_e + \cancel{D_e} = D_e$$

$$= 29 \times 10 + 21 \times \frac{1}{4} = \underline{\underline{290 \frac{1}{4}}}$$

$$V = 329/a = 43.5^{\circ}$$

[illegible]